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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,522	10/27/2003	Nobuaki Kamiyama	9319G-000583	1893

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EXAMINER	
PHAM, HAI CHI	
ART UNIT	**PAPER NUMBER**
2861	

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	10/694,522	KAMIYAMA ET AL.	
	Examiner	Art Unit	
	Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 03/22/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9:

- The claimed "device" as having "at least one part thereof is formed by the droplet discharge apparatus according to claim 6" is so vague that it is impossible to ascertain the nature of the claimed limitation, e.g., it is not known how the remaining part of the "device" would be connected to and/or function in cooperation with the droplet discharge apparatus.

Claim 10:

- The claimed "electronic equipment" as having "at least one part of a system component thereof is formed by the droplet discharge apparatus according to claim 6" is so vague that it is impossible to ascertain the nature of the claimed

limitation, e.g., it is not known how the remaining part of the "electronic equipment" would be connected to and/or function in cooperation with the droplet discharge apparatus.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Takizawa et al. (U.S. 6,357,849).

Takizawa et al. discloses an ink jet recording apparatus including a detection device for detecting a droplet discharged from a discharge nozzle (nozzles 720) provided in a discharge head (ink jet print head 701), comprising a light emitter (light emitter 707) for emitting a detection light, a receiver (light receiver 708) for receiving said detection light, and a moving device (print head shifting means 702 through 704) for moving said discharge head in a direction to intersect the optical path of said detection light, said moving device moving said discharge head in said direction of movement, said discharge nozzle discharging said droplets at a predetermined time interval (Figs. 3 and 22). Takizawa et al. further teaches that the light flux (730) is inclined to the nozzle alignment at an angle θ, which can extend from 0° to 180°,

including a position where the light flux is orthogonal to the nozzle alignment, e.g., $\theta=90^{\circ}$ (col. 17, lines 15-36), and wherein the required conditions for the ink droplets to be detected by the laser beam without any pair of ink droplets ejected from adjoining nozzles to pass through the light flux simultaneously, are given by the following expressions (1) and (2):

(1) $\sin\theta \geq La / D$ or $D \sin\theta \geq La$

where La is the width or diameter of the laser beam, D is the pitch of the nozzles and (D sin θ) is the distance between the discharge nozzles in the direction of movement of the discharge head. In other words, the distance (D sin θ) is equal to or greater than the diameter of the laser beam La, which in turn is greater than the sum of half the diameter of the laser beam and half the diameter the ink droplet (Fig. 22 shows that half of the diameter of the laser beam is greater than half of the diameter of the ink droplet).

(2) $CRV / F \leq La / \cos\theta$

where CRV is a travel speed of the ink jet print head passing through the laser beam, F is a driving frequency of ejection of ink droplets, and (CRV / F) denotes the relative distance that said discharge head and said detection apparatus move from when a discharge nozzle discharges one droplet to when said discharge nozzle discharges the next droplet, and (La / cos θ) the diameter of the laser beam in the direction of movement of the print head.

With regard to claim 6, Takizawa et al. discloses the ink jet recording apparatus comprising a discharge head with a plurality of discharge nozzles for discharging droplets arranged side by side in a predetermined direction (Fig. 17), and the detection

device including the light emitter (707) and the light receiver (708) detecting whether said droplets are discharged from said discharge nozzles, and a control unit (system controller 54) for performing predetermined processing for said discharge head based on the detection result of said detection device.

Takizawa et al. further teaches:

- wherein in a case where the diameter of the beam of said detection light is greater than the diameter of a measurement region of said receiver, D is the diameter of said measurement region (La being the width of light flux 730),
- a control device (controller 54) for resetting at least one of the values of said D, d and H (col. 18, lines 13-23),
- wherein the number of said discharge nozzles can be optionally set (e.g., in one of the embodiment, the number of nozzles to be inspected being grouped to include three nozzles in every other nozzle array) (col. 16, lines 37-60),
- an ink jet recording apparatus including the droplet discharge apparatus.

The method claims 5 and 8 are deemed to be clearly anticipated by functions of the above structures.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HAI PHAM
PRIMARY EXAMINER

July 25, 2005